REMARKS

I. General

The issues outstanding in the instant application are as follows:

- Only claims 7 through 37 are indicated as pending;
- The Abstract is objected to for length;
- Claims 8, 9, 10, 12, 17, 18, 19, 24, 29 and 37 are objected to for various informalities;
- Claims 7-14, 16, 17, 18, 21 and 28-31 stand rejected under 35 U.S.C. §103(a) as unpatentable over "applicant's admitted prior art" in view of Ono, et al., U.S. Pat. No. 5,465,402 (hereinafter *Ono*);
- Claims 15, 19, 20 and 32 are objected to as being dependent upon a rejected base claim; and
- Claims 22-27 and 33-37 are indicated as allowable.

First Applicants would like to express their gratitude for the indication of allowability of claims 15, 19, 20 and 32, as well as the allowance of claims 22-27 and 33-37. However, Applicants hereby traverse the outstanding rejections of claims 7-14, 16, 17, 18, 21 and 28-31, and request reconsideration and withdrawal of the outstanding rejections in light of the amendments and remarks contained herein. Claims 1 through 37 are currently pending in this application.

II. Pending Claims

Applicants wish to respectfully point out that the Election filed May 7, 2003 in response to the Restriction Requirement mailed April 7, 2003, only elected claims 7-37 and did not cancel claims 1-6. Therefore, the indication in the Office Action Summary that only claims 7-37 are pending in the application is incorrect. Applicants respectfully contend that this portion of the "Disposition of the Claims" section should indicate claims 1-37 as pending with claims 1-6 as withdrawn from consideration.

III. The Abstract

The Office Action objects to the Abstract of the Disclosure because it contains more than 150 words. In response a replacement Abstract, 141 words in length, is presented above. This replacement Abstract is drawn from, and supported by, the first two paragraphs of the Specification Summary, page 6, lines 3-17.

IV. Claim Objections

The Office Action objects to claims 8 and 9, suggesting the word "system" be changed to "terminal". This suggestion is implemented in the amendments to claims 8 and 9 presented above to correct these typographical errors and to clarifying antecedent basis.

The Office Action objects to claim 10, suggesting the word "said" be changed to "the". Applicants fail to understand the basis for this objection as the limitation "said tuning signal" appears in lines 4 and 11 of base claim 7. Therefore Applicants respectfully request that this objection be clarified or withdrawn.

The Office Action objects to claims 12 and 17-19, suggesting that the phrase "said discrete steps" be changed to "the discrete steps" in these claims. Applicants fail to understand the basis for this objection as the phrase "a plurality of discrete steps" in claim 10 provides sufficient antecedent basis for the limitation "said discrete steps" in claims 12 and 17-19. However, as the phrase "said discrete steps" in the claims in question varies slightly from the phrase of claim 10, Applicants have amended claims 12 and 17-19 as suggested. Additionally, claims 11, 25 and 26 have been amended in a similar manner.

Claims 24 and 29 are objected to by the Office Action, which suggests that the phrase "said frequency" be changed to "the frequency". This suggestion is implemented in the amendments to claims 24 and 29 presented above to clarify any ambiguity that the Examiner may feel is present in these claims.

The Office Action objects to claim 37, suggesting the word "system" be changed to "terminal". This suggestion is implemented in the amendments to claim 37 presented above to correct this typographical error and to clarifying antecedent basis.

V. Rejections under 35 U.S.C. §103(a)

The Office Action rejects claims 7-14, 16, 17, 18, 21 and 28-31 under 35 U.S.C. §103(a) as unpatentable over "applicant's admitted prior art" in view of *Ono*. Applicants respectfully traverse these rejections.

A Prima Facie case of obviousness has not been established.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art cited must teach or suggest all the claim limitations. See M.P.E.P. §2143. Without conceding the second criteria, Applicants respectfully assert that various ones of the rejections of claims 7-14, 16, 17, 18, 21 and 28-31 do not satisfy the first and/or third criteria.

The recited combination does not teach or suggest all claimed limitations.

Independent Claim 7

The Office Action alleges that "the applicant discloses all the limitations of claim 7 and 21 in the admitted prior art ... except a frequency synthesizer responsive to a tuning signal for providing a local oscillator signal; and a controller responsive to a comparison signal for providing the tuning signal." The Office Action further alleges "Ono et al. discloses a frequency synthesizer ... responsive to a tuning signal ... for providing a local oscillator signal ... and a controller ... responsive to a comparison signal ... for providing the tuning signal." However, this combination, as presented, does not teach or suggest all limitations of the claimed invention.

Claim 7 defines "a radio modem ... including...a phase-locked loop comparing a characteristic of said local oscillator and intermediate frequency signals and, in response, providing a comparison signal." The Office Action indicates that these limitations are admitted by the present application as prior art. Assuming arguendo that the portion of the Specification's discussion in the Background section cited by the Office Action is an

admission of prior art, Applicants' disclosure does not teach this limitation and the Office Action does not depend on *Ono* as teaching this limitation. At Page 3, line 20 the present specification, in describing FIGURE 6, states "Modulator 112 further receives an IF carrier signal from phase-locked loop 114." At Page 3 line 24, the present specification provides "Phase-locked loop 114 of modem 110 receives, and is locked to, an IF frequency signal provided by frequency synthesizer 120 which, in turn, is locked to a reference frequency signal provided by reference oscillator 130." On Page 4, at line 4, the specification discuses a receiver terminal having "a local oscillator signal provided by phase-locked loop," and "Phase-locked loop 214 of modem 210 is locked to an IF signal provided by local oscillator or frequency synthesizer 220 which, in turn, is locked to an output provided by reference oscillator 230."

Thus, the present specification does not disclose as prior art "a phase-locked loop comparing a characteristic of said local oscillator and intermediate frequency signals and, in response, providing a comparison signal" (emphasis added) as alleged by the present Office Action.

Additionally, claim 7 defines "a controller responsive to said comparison signal for providing said tuning signal." As noted above the Office Action depends on *Ono* as teaching these limitations. Applicants respectfully disagree. At cited lines 46-50 of column 4, *Ono* provides that "At the time the number is output from controller 12 to frequency synthesizer 4, a phase comparator within the frequency synthesizer 4 indicates an out of phase condition, or out of lock condition to controller 12 via the PLL LOCK signal." Thus, *Ono* fails to teach "a controller responsive to said comparison signal [derived and provided by a PLL] for providing said tuning signal" (bracketed clarification added). Rather *Ono* teaches that providing the FREQ. DATA number to the frequency synthesizer results in a phase comparator within the frequency synthesizer indicating an out of phase or out of lock signal to the controller, via a PLL.

Furthermore, claim 7 defines "a frequency synthesizer responsive to a tuning signal for providing a local oscillator signal" As also noted above the Office Action depends on *Ono* as teaching these limitations. Applicants respectfully disagree. As discussed in cited column 4, lines 37-40 *Ono* provides that "A FREQ. DATA signal is input to the frequency synthesizer 4 from controller 12, and this signal provides a number which is a divisor for a

divide by counter (not shown) in frequency synthesizer 4." Thus, *Ono* teaches the output of a number (FREQ. DATA) from a controller to a frequency synthesizer not output of a tuning signal.

For at least the above reasons Applicants respectfully assert that independent claim 7 is patentable over the 35 U.S.C. § 103(a) rejection of record. Thus Applicants respectfully request withdrawal of the rejection of claim 7, and an indication of allowance therefor.

Independent Claim 28

In addressing independent claim 28, the Office Action alleges that "the applicant discloses all the limitations of claim 28 in the admitted prior art ... except synthesizing a local oscillator signal in response to a tuning signal; and providing the tuning signal in response to the offset error signal." The Office Action further alleges "Ono et al, discloses a frequency synthesizer ... responsive to a tuning signal ... for providing a local oscillator signal ... and controller ... responsive to a offset error signal ... for providing the tuning signal. However, this combination, as presented, does not teach or suggest all limitations of the claimed invention as recited in claim 28.

Claim 28 defines "comparing a frequency of said intermediate frequency signal and a frequency of said local oscillator signal to supply an offset error signal." The Office Action indicates that these limitations are admitted by the present application as prior art. Once again, assuming arguendo that the portion of the Specification's discussion in the Background section cited by the Office Action is an admission of prior art, Applicants' disclosure does not teach this limitation and the Office Action does not depend on *Ono* as teaching this limitation. The cited portion of Applicants' disclosure is silent concerning error signals and comparing frequencies. However, at line 1 of page 3 the present Specification discusses "comparing the frequency divided sample with the reference signal input at the phase detector to provide the error signal." However, the background section of the present specification does not admit that "comparing a frequency of said intermediate frequency signal and a frequency of said local oscillator signal [synthesized in response to a tuning signal] to supply an <u>offset</u> error signal" (bracketed clarification and underline emphasis added) is known, as alleged by the present Office Action.

Additionally, claim 28 defines "providing said tuning signal in response to said offset error signal." As noted above the Office Action depends on *Ono* as teaching these limitations. Again, Applicants respectfully disagree. At cited lines 46-50 of column 4, *Ono* provides that "At the time the number is output from controller 12 to frequency synthesizer 4, a phase comparator within the frequency synthesizer 4 indicates an out of phase condition, or out of lock condition to controller 12 via the PLL LOCK signal." Thus, *Ono* fails to teach "providing said tuning signal in response to said offset error signal[supplied as a result of comparing a frequency of an intermediate frequency signal and a frequency of a local oscillator signal which in turn is synthesized in response to a tuning signal]" (bracketed clarification added). Rather *Ono* teaches that a phase comparator within the frequency synthesizer indicates an out of phase or out of lock signal to the controller upon the FREQ. DATA number being provided to the frequency synthesizer.

Furthermore, claim 28 defines "synthesizing a local oscillator signal in response to a tuning signal." As also noted above the Office Action depends on *Ono* as teaching these limitations. Applicants respectfully disagree. As discussed in cited column 4, lines 37-40 *Ono* provides that "A FREQ. DATA signal is input to the frequency synthesizer 4 from controller 12, and this signal provides a number which is a divisor for a divide by counter (not shown) in frequency synthesizer 4." Thus, *Ono* teaches output of a number (FREQ. DATA) from a controller to a frequency synthesizer, not a tuning signal, and thus use of this FREQ. DATA number by the frequency synthesizer, not a tuning signal.

For at least the above reasons Applicants respectfully assert that independent claim 28 is patentable over the 35 U.S.C. § 103(a) rejection of record. Thus, Applicants respectfully request withdrawal of the rejection of claim 28, and an indication of allowance therefor.

Dependent Claims 8-14, 16, 17, 18, 21 and 29-31

Claims 8-14, 16, 17, 18 and 21 ultimately depend from base independent claim 7 and claims 29-31 ultimately depend from base independent claim 28. Thus, each of claims 8-21 and 29-31 inherit all limitations of their respective base claims. Therefore, for the reasons advanced above in addressing the rejections of claims 7 and 28, each of claims 8-21 and 29-31 set forth features and limitations not recited by the combination of Applicants' alleged

admitted prior art and *Ono*. Thus, Applicants respectfully assert that for the above reasons claims 8-21 and 29-31 are patentable over the 35 U.S.C. § 103(a) rejection of record.

Furthermore, various ones of claims 8-21 and 29-31 recite limitations not present in the art of record. For example, claim 8 defines "wherein said characteristic is a phase relationship." The allegedly admitted prior art of Applicants' disclosure nor *Ono* teach this limitation, nor does the Office Action indicate that the allegedly admitted prior art of Applicants' disclosure nor *Ono* teach this limitation. *Ono* at column 4, line 47 specifically teaches a "phase comparator" in the frequency synthesizer not in the PLL, teaching away from the invention as claimed. Thus, Applicants respectfully assert that claim 8 is further patentable over the 35 U.S.C. § 103(a) rejection of record for at least this reason.

Claim 9 defines "wherein said characteristic is a frequency". The allegedly admitted prior art of Applicants' disclosure nor *Ono* teach this limitation, nor does the Office Action indicate that the allegedly admitted prior art of Applicants' disclosure nor *Ono* teach this limitation. *Ono* at column 4, line 47 specifically teaches a "phase comparator" in the frequency synthesizer, not a frequency comparison in the PLL, thereby teaching away from the invention as claimed. Thus, Applicants respectfully assert that claim 9 is further patentable over the 35 U.S.C. § 103(a) rejection of record for at least this reason.

Claims 10 and 29 each define "said tuning signal varies said frequency of said local oscillator signal in a plurality of discrete steps on either side of a nominal center frequency value" (emphasis added). Assuming arguendo that the Office Actions allegation that *Ono* at column 4, lines 37-46 teaches "the number provided to the divide by counter determines the number of discrete steps" no provision is made in *Ono* for these discrete steps to be "on either side of a nominal center frequency value." For at least this reason, Applicants respectfully assert that claims 10 and 29 are further patentable over the 35 U.S.C. § 103(a) rejections of record.

Claim 11 defines "said phase-locked loop is configured to lock to said intermediate frequency signal over a range of signal frequencies which is on the same order of magnitude as a frequency range between ones of the discrete steps." The Office Action admits this limitation is not part of the allegedly admitted prior art but fails to address this limitation, only addressing the limitations of base claim 10 stating "Ono et al. discloses locking over a

range of signal frequencies corresponding a to plurality of discrete steps (column 4, lines 37-54), wherein the number provided to the divide by counter determines the number of discrete steps." Whereas *Ono* is silent concerning a "signal frequencies which is on the same order of magnitude as a frequency range between ones of the discrete steps" and a phase-locked loop configured to lock to an intermediate frequency signal over such a range, Applicants respectfully assert claim 11 is further allowable over the §103 rejection of record.

Claim 12 recites "the discrete steps are equally spaced, having a frequency difference between steps within a range of 50 to 200 kilohertz." Contrary to the contention of the Office Action, *Ono* fails to disclose this limitation, discrete steps or any mention of specific ranges for such discrete steps. Therefore for this additional reason claim 12 is further patentable over the §103 rejection of record.

Claims 13 and 30 respectively define "an alarm corresponding to a predetermined value of said comparison signal" and "an alarm corresponding to a predetermined value of said offset error signal." The Office Action states that "Ono et al. further discloses an alarm (column 4, lines 46-50, PLL LOCK signal) corresponding to a predetermined value (out of phase condition) of the comparison signal." Thus, as indicated by the Office Action the PLL LOCK of *Ono* does not correspond to a comparison signal (produced by the PLL) or an offset error signal but rather to a signal lock condition. Therefore, for at least these reasons, claims 13 and 30 are further allowable over the §103 rejections of record.

Claims 14 and 31 respectively define "said controller is responsive to said alarm for adjusting said tuning signal" and "providing said tuning signal is performed in response to said alarm for adjusting said tuning signal." The Office Action inaccurately states that "Ono et al. further discloses the controller is responsive to the alarm for adjusting the tuning signal (column 4, lines 37-54), wherein the FREQ. DATA signal is adjusted during an out of phase condition." In contrast, *Ono* specifically teaches at line 50 of column 4 that the frequency synthesizer slews a voltage controlled oscillator to correct frequency and that the lock or unlock condition is only indicated to the controller. Therefore, for at least these additional reasons, claims 14 and 31 are further allowable over the §103 rejections of record.

Claim 16 recites that the "controller provides said tuning signal so as to produce a desired effect on said comparison signal" and claim 17 recites "wherein said phase-locked loop is operable over a predetermined range of signal frequencies on either side of a nominal center frequency and said controller calculates a number of the discrete steps required so as to produce a desired effect on said comparison signal." As noted above *Ono* and the allegedly admitted prior art do not teach or suggest the use of discrete steps, and particularly the use of discrete steps on either side of a nominal center frequency. Therefore, for at least these reasons at least claim 17, and its dependent claim 18, are further patentable over the prior art of record.

Examiner's Personal Knowledge

Although it is a bit unclear from the language of the Office Action, it appears the Examiner has either relied on his own personal knowledge, or taken Official Notice, with respect to several matters. For example, in the rejection of claim 8, the Office Action states "it would have been obvious to one of ordinary skill in the art that a PLL compares the phase of two signals and produces a comparison (error) signal based on the comparison." In the rejection of claim 9 the Office Action states "it would have been obvious to one of ordinary skill in the art that a PLL can compare the frequency of two signals." Under Rule 37 C.F.R. §1.104(d)(2), the Examiner is hereby requested to provide and make of record an affidavit setting forth his data as specifically as possible for these assertions. Alternatively, under M.P.E.P. §2144.03, the Examiner is hereby requested to cite a reference in support of the assertions. Otherwise the rejection of claims 8 and 9 should be withdrawn.

The Office Action does not provide the requisite motivation.

It is well settled that the fact that references can be combined or modified is not sufficient to establish a prima facie case of obviousness, M.P.E.P. §2143.01. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ.2d 1430 (Fed. Cir. 1990), as cited in M.P.E.P. §2143.01.

The Office Action admits that the cited allegedly admitted prior art does not teach having various elements. The Office Action attempts to cure these deficiencies by introducing *Ono* or common knowledge, which the Office Action alleges to teach having such elements. However, the Office action fails to provide proper motivation for making many of these combination. For example, no motivation is provided for modifying the allegedly admitted prior art or *Ono* in the rejection of claims 8 and 9. As a further example, the motivation presented in addressing claims 10, 17 and 29 was provided as:

> "...it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the prior art with the adjustable frequency synthesizer and controller of Ono et al. in order to reduce phase/frequency error in the modems and increase the adaptability of the modems during phase/frequency synchronization."

This stated motivation is silent concerning discrete steps defined in claims 10, 17 and 29, and thus is insufficient to combine the references to reach claims 10, 17 and 29.

Thus, the motivation provided by the Examiner in addressing at least claims 8, 9, 10, 17 and 29 is improper, as the motivation must establish the desirability for making the modification. No valid suggestion has been made as to why a combination of the allegedly admitted prior art, *Ono* and/or common knowledge is desirable, absent the use of impermissible hindsight. Therefore, the rejection of at least claims 8, 9, 10, 17 and 29 should be withdrawn.

VI. Conclusion

The Examiner is again thanked for the allowance of claims 22-27 and 33-37, and the indication that claims 15, 19, 20 and 32 include allowable subject matter. However, for all the reasons given above, Applicants submit that the remaining pending claims distinguish over the prior art under 35 U.S.C. §103. Accordingly, Applicants submit that this application is in full condition for allowance and respectfully request this application be passed to issue.

Applicant believes no fee is due with this response. However, if a fee is due, please charge Deposit Account No. 06-2380, under Order No. 63692/P014US/10304972 from which the undersigned is authorized to draw. Further, Applicants respectfully request that the Examiner call the below listed attorney if the Examiner believes that he can helpful in resolving any remaining issues.

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Respectfully submitted,

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